REMARKS

Review and reconsideration on the merits are requested.

Applicants respond to the Action following the paragraphing of the Examiner.

Paragraph 3.

Claim 10 is amended in a manner so that "an R-T-B-based" is now used.

In light of the above amendment to claim 10, claim 11 is appropriately amended.

Basis for Claim Amendments

The amendment to claim 10 finds basis in the original specification as filed at page 5, lines 4-10, and in the patent at col. 3, lines 1-14.

The term "R-T-B based" in all claims has been changed to the term --R-T-B-based-- based on the original specification. See the patent at, for example, col. 1, about line 7, line 17, col. 2, line 11, line 59, etc.

In amended claims 1, 5, 8, 10 and 12-14, the recitation "a carbon content of 0.10 weight % or less and a nitrogen content of 0.15 weight% or less" finds support at page 10, lines 8-17 of the original English specification. See the patent at col. 5, about lines 44-58.

In amended claims 1 and 12, the recitation "Br being a residual magnetic flux density, and $4\pi I_{max}$ being a maximum value of $4\pi I$ in a curve of $4\pi I$-H curve, wherein $4\pi I$ is the intensity of magnetization, and H is the intensity of a magnetic field" finds support at page 12, lines 23-25 of the original specification. See the patent at col. 6, about lines 55-64.

Rejection/Allowable Subject Matter

The Examiner indicates that claim 11 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. § 112, second paragraph, and that claims 12-14 are allowed. A telephone interview was conducted on this point.

Summary of Telephone Interview

The Examiner really meant to say that claim 10 (not claim 11) would be allowable if rewritten, etc., to overcome the 112 rejection and in that case, claim 11 would also be allowable.

The Prior Art

U.S. 6,159,308 Uchida et al (Uchida); U.S. 4,888,506 Umehara et al (Umehara).

The Art Rejection

Claims 1-9 were rejected under 35 U.S.C. § 103(a) as unpatentable over Uchida in view of Umehara.

The Examiner's reading of the prior art and application of the claims to the prior art is set forth in the Action, and will not be repeated here except as necessary to an understanding of Applicants' traversal which is now presented.

Traversal

In the following, Applicants refer to the reissue specification; that refers to the specification as filed; cites to the patent specification and also given.

Objects of the Invention

As described in the reissue specification at page 4 (see page 4, lines 19-27 of the reissue specification, patent at col. 2, lines 58-67), one object of the present invention is to provide a thin

(or thin and long), R-T-B-based, sintered arc segment magnet having a low oxygen content and high density as well as having high orientation of the sintered magnet body which has not been possible using conventional technology, corresponding to amended claims 1-4 of the present application.

Another object of the present invention is to provide a radially anisotropic, R-T-B-based, sintered arc segment magnet having a low oxygen content and high density as well as having a high orientation of the sintered magnet body which has not been possible using conventional technology, corresponding to amended claims 5-7 of the present application.

A further object of the present invention is to provide a radially anisotropic, R-T-B-based sintered ring magnet having a low oxygen content and high density as well as having a high orientation of the sintered magnet body which has not been possible using conventional technology, corresponding to amended claims 8 and 9 of the present application.

A still further object of the present invention is to provide a method capable of producing an R-T-B-based, rare earth sintered magnet, a thin, R-T-B-based, sintered arc segment magnet, a radially anisotropic, R-T-B-based, sintered arc segment magnet and a radially anisotropic, R-T-B-based, sintered ring magnet as mentioned above, corresponding to amended claims 10-14 of the present application.

Addressing the Rejections

Applicants do not deny that a thin, R-T-B-based, sintered arc segment magnet is a radially anisotropic, R-T-B-based, sintered arc segment magnet and a radially anisotropic,

R-T-B-based, sintered ring magnet of the present invention is an R-T-B-based, sintered magnet having a low oxygen content and high density, which is the same as disclosed in Uchida.

However, Uchida fails to disclose or suggest any distinguishing features of the R-T-B-based, sintered magnet body having high orientation thereof as claimed in amended claims 1-9 and also fails to disclose any method capable of producing the R-T-B-based, sintered magnet body having high orientation as claimed in amended claims 10-14 of the present application.

The Examiner states in the Office Action that of orientation $Br/4\pi I_{max}$ set forth in claim 1 and an orientation [Br// / (Br// + Br⊥)] in both claims 5 and 8 is inherent in the R-T-B-based, sintered magnet. However, this is not correct.

The value $4\pi I_{max}$ is a composition constant (an inherent characteristic) determined by the composition of an R-T-B-based, sintered magnet. Factors determining Br (Br//) are the following features (1) and (2), **which are not inherent**. These two features are explained in detail in the section "BACKGROUND OF THE INVENTION" on page 1, line 11 to page 4, line 16, of the reissue-specification, patent at col. 1, lines 11 - col. 2, line 55.

In this regard, a degree of orientation $Br/4\pi I_{max}$ and [Br// / (Br// + Br⊥)] x 100 (%) of an isotropic R-T-B-based, sintered magnet having no orientation is about 50%, respectively, whereas a degree of orientation $Br/4\pi I_{max}$ and [Br// / (Br// + Br⊥)] x 100 (%) of an anisotropic R-T-B-based, sintered magnet having completer orientation is about 100%, respectively.

Features (1) and (2) - Not Inherent

(1) An orientation degree of a molded body is determined by how each particulate in fine powder form for the R-T-B-based, sintered magnet in a molding raw material, which is introduced into a magnetic field, follows in the orienting direction applied and is fixed in the state that it followed in the molded body, whereby the orientation degree of the molded body is retained when it is sintered, and the orientation degree of the R-T-B based, sintered magnet is finally fixed as the orientation degree of the sintered body.

(2) In conventional technology, because a cavity of a magnetic field-anisotropic extrusion die used in the molding step in a magnetic field is different corresponding to the cases of a thin arc segment shape, i.e., where a radially anisotropic arc segment shape or a radially anisotropic ring shape is involved, it is seen that the degrees of orientation of the resulting molding tend to significantly decrease as compared with those of a molding obtained by applying a parallel magnetic field. Further, a molded body easily cracks, and even when a molded body without cracks is obtained, the molded body would greatly bend when sintered, because heterogeneousness of mold density is remarkably high. With conventional technology, it has been impossible to obtain an R-T-B-based, sintered arc segment magnet, a radially anisotropic, R-T-B-based sintered arc segment magnet or a radially anisotropic, R-T-B-based sintered ring magnet each having a low oxygen content and high density as well as having a high orientation of the sintered magnet body.

Accordingly, one of ordinary skill in the art, taking the teaching of Uchida, which does not teach or suggest features (1) and (2) discussed above as factors determining Br (Br//), would not be led to the present invention, and thus, clearly claims 1-14 are not obvious over Uchida.

However, the rejection is a combination rejection, and Applicants now turn to Umehara.

Turning now to the Examiner's reading of Umehara, the Examiner first cites Umehara at col. 1, lines 44-57 and col. 2, lines 41-54, as teaching that it is known to form R-Fe-B rare earth permanent magnets into a plurality of arc segments and into radial anisotropic ring magnets for use in voice coil-type linear motors.

Although the Examiner does not cite any particular portion of Umehara, from Umehara at col. 6, about lines 40-45, Umehara does teach forming a cylindrical permanent magnet having an outer diameter of 99 mm and an inner diameter of 92 mm and a length of 23 mm, whereby the thickness of the permanent magnet would be 3.5 mm (in the radial direction).

Umehara describes a radially anisotropic, R-T-B-based sintered ring magnet at col. 5, line 18 to col. 6, line 24 thereof. However, it is clear that from a viewpoint of the disclosure of the raw materials used in Umehara that Umehara's sintered ring magnet corresponds to Comparative Example 5 having a low orientation in Table 4 of the reissue specification.

Thus, those skilled in the art referring to Uchida and Umehara would not reach the invention recited in amended claims 1-14 at the time the present invention made even by incorporating the teaching of Uchida into the teaching of Umehara, and, accordingly, the amended claims 1-14 was not obvious over Uchida in view of Umehara.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

/Peter D. Olexy/
Peter D. Olexy
Registration No. 24,513

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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